

REMARKS

Claims 16-27 are now pending in this application. Claims 16, 20 and 23 have been amended by way of the present amendment. Reconsideration is respectfully requested.

In the outstanding Office Action, claims 16, 17, 20-23, 25-27 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,903,893 (Kleewein) in view of U.S. Patent No. 5,594,898 (Dalal); claim 18, 19 and 24 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Kleewein and Dalal as applied to claim 16, and further in view of U.S. Patent No. 5,937,409 (Wetherbee). Reconsideration is respectfully requested.

35 U.S.C. § 103 Claim Rejections

Claims 16, 17, 20-23, 25-27 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Kleewein in view of Dalal. Reconsideration is respectfully requested.

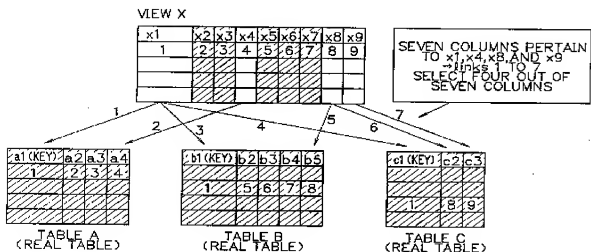
Claims 16, 20 and 23 has been amended to further clarify the invention. In particular, claim 16 has been amended to recite:

A database system which searches a plurality of tables joined by a relational database, comprising:
table extraction means for extracting one table including columns that store data to be retrieved from a plurality of tables;
column exclusion means for excluding columns that store data to be retrieved of the table extracted by said table extraction means and columns on other tables which store the same data contents as data contents of the columns on the extracted table on other tables which store the same data to be retrieved on the table extracted by said table extraction means from columns to be extracted in subsequent processing.

Claims 20 and 23 have been amended in a way to convey the same concept. Support for the amendment is provided at least by paragraph [0041] of U.S. Patent Application Publication No. US 2005/0075999 (i.e., the published application) and at least, as shown in **FIG. 10**. Therefore, it is respectfully submitted that the amendment raises no question of new matter.

In particular, as shown in **FIG. 10**, column x1 on view X corresponds to columns a1, b1, and c1 on real tables A, B, and C, column x4 on view X to column a4 on real table A, column x8 on view X to columns b5 and c2 on real tables B and C, and column x9 on view X to column c3 on real table C and the join processing of this embodiment selects one real column corresponding

FIG. 10



to each of four columns x1, x4, x8, and x9 including data to be retrieved *so as to minimize the number of joined tables upon search* (emphasis added).¹ Specifically, there are a total of seven columns (links 1 to 7 indicated by the arrows of **FIG. 10**) on the real tables A, B, and C that pertain to four columns x1, x4, x8, and x9 on view X, and only *four columns (links) are selected from these seven columns (links)* (emphasis added).² Therefore, in contrast to the applied art, the claimed invention of amended claim 16, and in similar terms claim 20 and 23, discloses:

column exclusion means for excluding columns on other tables which store the same data to be retrieved on the table extracted by said table extraction means from columns to be extracted in subsequent processing (emphasis added).

¹ US 2005/0075999 at page 9, paragraph [0145].

² *Id.* at page 9, paragraph [0146].

That is, by virtue of the above-discussed limitation, the claimed invention can perform high-speed memory search processing without wasting memory capacity by *extracting only necessary columns from tables and excluding redundant columns from tables* in a database system composed of a plurality of tables.

Kleewein discloses an improved join operation is performed between data in at least two tables, with one of the tables stored in a remote database (hereafter "remote table") and another table stored in a local database (hereafter "local table").³ In particular, Kleewein discloses a database management system (DBMS) procedure 30, as shown in FIG. 2 below, that controls merge-join procedure 36 to access data from a remotely stored table (i.e., an "outer" table) and the merge-join procedure 36 employs either an "IN" predicate or a "BETWEEN" predicate in an SQL statement that is issued to the outer table.⁴ However, as can be seen in FIG. 2, Kleewein disclose a merge-join function of FIG. 2 that is focused on *rows* and not on "columns," as

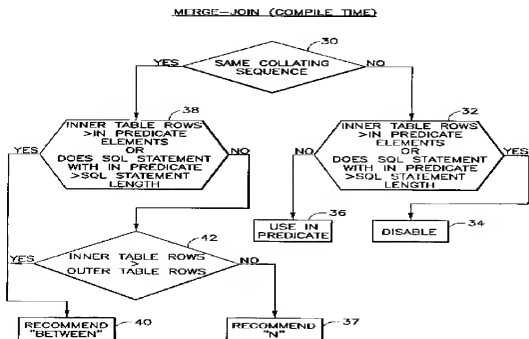


FIG.2

³ Kleewein at ABSTRACT.

⁴ *Id.* at column 4, lines 31-36.

recited in the claimed invention. That is, in contrast to the claimed invention, Kleewein nowhere discloses:

column exclusion means for excluding columns on other tables which store the same data to be retrieved on the table extracted by said table extraction means from columns to be extracted in subsequent processing (emphasis added).

Specifically, in the merge-join function of Kleewein, when an external table and an internal table are joined, rows containing the same data as in the columns is set as a condition of joining between table A and table B. Thus, Kleewein does not disclose exclusion of the columns commonly owned by two tables, as does the claimed invention. Therefore, Kleewein clearly does not disclose and is substantially different from the claimed invention.

In addition, the outstanding Office Action acknowledges deficiencies of Kleewein and attempts to overcome these deficiencies by combining Dalal with Kleewein.⁵ However, Dalal cannot overcome all of the deficiencies of Kleewein, as discussed below.

Dalal disclose a method and system for efficiently joining database tables using compact row mapping structures is provided.⁶ However, in contrast to the claimed invention, Dalal nowhere discloses:

column exclusion means for excluding columns on other tables which store the same data to be retrieved on the table extracted by said table extraction means from columns to be extracted in subsequent processing (emphasis added).

That is, though Dalal includes the term "virtual table," Dalal merely discloses a joined table, nowhere discloses a means for creating the virtual table, as recited in the claimed invention as: "column excluding means for excluding columns on other tables which store the same data."⁷

⁵ Outstanding Office Action at page 3, paragraph 2.

⁶ Dalal at ABSTRACT.

⁷ *Id.* at column 1, lines 50-55.

Further, though Dalal includes the term "restrict", what is disclosed by Dalal is merely a retrieval technique of database processing, such that only records restricted by an AND condition of "Region" and "Amount" are extracted from thus-joined two tables.⁸ That is, Dalal nowhere discloses, as the claimed invention recites: "column excluding means for excluding columns on other tables which store the same data" that creates a virtual table by excluding columns. Thus, Dalal cannot overcome all of the deficiencies of Kleewein.

Furthermore, independent claim 25 discloses similar limitations to the above-discussed claims in reciting: "means for excluding any duplicative columnar data in the plural distributed databases from the virtual table." Moreover, independent claim 27 discloses similar limitations to the above-discussed claims in reciting:

excluding, from the created virtual table, *columns of the second extracted table which duplicates data contents of the first extracted table*;

excluding, from the created virtual table, *columns of the third extracted table which duplicates data contents of either the first or the second extracted table* (emphasis added).

Thus, at least for the reasons discussed above, claims 25 and 27 also are not disclosed by Kleewein or Dalal. Therefore, based on the discussion above, it is respectfully submitted that neither Kleewein or Dalal, whether taken alone or in combination, disclose, suggest or make obvious the claimed invention and that independent claims 16, 20, 23, 25 and 27, and claims dependent thereon, patentably distinguish thereover.

Claims 18, 19 and 24 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Kleewein and Dalal as applied to claim 16, and further in view of Wetherbee. Reconsideration is respectfully requested.

Claims 18 and 19; and claim 24 ultimately depend upon claim 16 and claim 23, respectively. As discussed above, neither Kleewein or Dalal disclose the claimed invention of

⁸ *Id.* at column 2, lines 45-57.

claim 16 and claim 23. Thus, at least for the same reasons, neither Kleewein or Dalal disclose the claimed invention of claims 18 and 19; and claim 24.

In addition, the outstanding Office Action acknowledges deficiencies of Kleewein and Dalal and attempts to overcome these deficiencies by combining Weatherbee with Kleewein and Dalal.⁹ However, Wetherbee cannot overcome all of the deficiencies of Kleewein and Dalal, as discussed below.

Wetherbee discloses a relational mapper supports the storage of objects from an object oriented environment in one or more relational databases.¹⁰ However, in contrast to the claimed invention, Wetherbee nowhere discloses:

column exclusion means for excluding columns on other tables which store the same data to be retrieved on the table extracted by said table extraction means from columns to be extracted in subsequent processing (emphasis added).

Thus, Wetherbee cannot overcome all of the deficiencies of Kleewein and Dalal. Therefore, it is respectfully submitted that none of cannot overcome all of the deficiencies of Kleewein, Dalal or Wetherbee, whether taken alone or in combination, disclose, suggest or make obvious, the claimed invention and that claims 18, 19 and 24, and claims dependent thereon, patentably distinguish thereover.

Conclusion

In view of the above, consideration and allowance are respectfully solicited.

In the event the Examiner believes an interview might serve in any way to advance the prosecution of this application, the undersigned is available at the telephone number noted below.

⁹ Outstanding Office Action at page 7, paragraph 2.

¹⁰ Wetherbee at ABSTRACT.

Applicant believes no fee is due with this response. However, if a fee is due, please charge our Deposit Account No. 22-0185, under Order No. 21776-00033-US2 from which the undersigned is authorized to draw.

Dated: September 7, 2007

Respectfully submitted,

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